

Contribution of Statistics to the Prevention of Blindness

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Contribution of Statistics to the Prevention of Blindness*

Joint Session with the American Foundation for the Blind

Chairman, Ralph G. Hurlin, Director of the Department of Statistics, Russell Sage Foundation

CHAIRMAN HURLIN: I have no intention of making any speeches as chairman of this meeting. I should just like to call your attention to the fact that the program this morning is built around the work of the Committee on Statistics of the Blind.

About four or five years ago, while preparations were being made for the taking of the census of 1930 by the Federal Census Bureau, a conference was called in the offices of the American Foundation for the Blind. It was jointly sponsored by the Foundation and by the National Society for the Prevention of Blindness. That conference was primarily concerned with the question, "Should the Census Bureau continue to attempt to count the blind, providing the basic statistics as to the number of blind and some of their social characteristics?" The conference went on to discuss other aspects of statistics of the blind and of blindness and, as a result, a resolution was passed that a committee be established to work in this field. That Committee, sponsored by the two organizations, was appointed and has been working consistently during the past four or five years. The Committee has not made a great deal of noise but has accomplished, I believe, some very real results. The work is by no means concluded, but enough has been accomplished to talk about, and some members of the Committee are taking the opportunity this morning of selling their wares.

As committees go, I think this one would rate description as hard-working, and I believe that almost all the members of the Committee have kept closely in touch with the program and have been contributing consistently to its work. But, of the seven or eight members of the Committee, perhaps the two hardest workers

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are the two members of the staffs of the respective organizations already mentioned. One of them, Miss Kerby, statistician of the National Society, is to present the first paper.

A Plan for Standardization of Statistics of the Blind

C. Edith Kerby

Even if trained statisticians were available to take over the entire burden of records and reports from workers for the blind and the prevention of blindness, it is doubtful if they should do so. Records are an important working tool for the physician, social worker and vocational adviser in their services to the blind. They are precision instruments as important in their way as the ophthalmoscope, vision test charts, etc.

Unfortunately it is only too true that the average person believes the doing of a job to be quite unrelated to the record of it. Only when the physician or case worker finds himself at a loss to carry on with a patient for whom his predecessor has left no records, or when some tragic mistake of omission or commission occurs, does the significance of the record as a working tool become apparent. Likewise, the conscientious worker frequently becomes so absorbed in the problems of individual cases that he finds little time to stand off and view the work as a whole, to consider new methods and objectives in the light of the past.

Side by side with this antipathy to anything which bears the label "statistics," there exists a demand for more definite information, more systematic methods of procedure. It was in answer to this demand that the Committee on Statistics of the Blind came into existence.

Over and over again workers for the blind and prevention workers asked such questions as "How many blind persons are there in the United States? What are the most important causes of blindness?" Research workers having access to libraries and files of reports searched for the answers to these questions and found, not a complete absence of information but, which is worse, contradictory information. Even the most complete and, presumably,

the most authentic source—the decennial reports compiled by the United States Bureau of the Census—gave unsatisfactory information on these important points. The Bureau's statisticians recognized that their enumeration of 1920 was incomplete. They estimated that the total number of cases reported was probably one-third less than the true figure, and had no way of knowing whether the characteristics of the group reporting would be true of the blind population as a whole. Certain state commissions for the blind estimated that the census total was probably only one-half the true figure for their states.

Again, concerning causes of blindness, the census could give only data based on the statements made by the blind persons themselves, instead of the reports of ophthalmological examinations. On the latter subject a few state commissions had compiled some ophthalmological findings, but no two had summarized their data in the same way, and, hence, totals or comparisons were not possible. On other subjects, also, information, for the most part, was found to be inconsistent, inadequate, or even completely lacking.

This was the situation in 1929. About that time it became evident that much of the difficulty was due to differences in definition and classification. The net result was that very few organizations were presenting the valuable information in their files in a form to make it available for guidance.

A special conference was called by the American Foundation for the Blind and the National Society for the Prevention of Blindness to discuss methods of improving statistics on blindness, as a result of which the Committee on Statistics of the Blind was created in 1930. It was charged with the responsibility of standardizing definitions, classifications, methods, etc. The Committee represents ophthalmologists, workers for the blind and for prevention of blindness, and social statisticians. It is sponsored and financed jointly by the American Foundation for the Blind and the National Society for the Prevention of Blindness.

The membership of the Committee on Statistics of the Blind is as follows:

Conrad Berens, M.D., member, ophthalmological section of the National Conference on Nomenclature of Disease

Lewis H. Carris, managing director, National Society for the Prevention of Blindness (*ex officio*)
Ralph G. Hurlin, Ph.D., director, Department of Statistics, Russell Sage Foundation (chairman)
Robert B. Irwin, executive director, American Foundation for the Blind (*ex officio*)
C. Edith Kerby, statistician, National Society for the Prevention of Blindness
Evelyn C. McKay, research agent, American Foundation for the Blind (secretary)
Bennet Mead, formerly of the United States Bureau of the Census
B. Franklin Royer, M.D., secretary, Committee on Conservation of Vision, State and Provincial Health Authorities of North America
Stetson K. Ryan, secretary, Connecticut Board of Education of the Blind

On medical matters the members have worked in close cooperation with ophthalmologists. At the last meeting of the American Medical Association, a special committee of ophthalmologists (of which Dr. Holloway is chairman) was designated to cooperate with the Committee on Statistics of the Blind. Likewise, workers for the blind have been freely consulted on problems, as individuals and as members of the three national organizations representing work for the blind (American Association of Instructors of the Blind, American Association of Workers for the Blind and the Conference of State Commissions and Associations for the Blind).

Before proceeding with a summary of the work of the Committee on Statistics of the Blind to date, it must be noted that, for the present at least, the Bureau of the Census has discontinued its special studies of facts relating to the blind. In 1930 the Bureau made only the simple counts of cases enumerated at the time of the regular decennial census. It is quite possible that we may never return to the wholesale and impersonal methods of the census; at least, not if we find that more reliable information is secured by placing the entire responsibility for providing necessary statistical data for guidance upon workers in our field.

The first task of the Committee was to decide upon a list of items on which information would be obtained. It was recognized

that the specialized functions of various agencies working with the blind sometimes make it necessary for these organizations to include certain data which would not have general interest or application. The Committee, therefore, recommended only the following minimum list of items to be included on case records of all organizations:

- Name
- Address
- Sex
- Date of birth
- Country (or state) of birth
- Marital status (single, married, divorced, widowed)
- Race (White, Negro, Indian, Chinese, Japanese, Mexican)
- Degree of visual handicap
- Age at loss of sight
- Cause of loss of sight (standard list)
- Other members of family blind: if so, specify (blood relatives only)
- Raised type used (specify)
- Last occupation before blindness
- Present occupation
- Outdoor relief (financial) from public or private agency
- If in institution, specify.

An additional list of items was suggested as valuable but not recommended for tabulation at the present time. These are:

- Religion
- Extent of education, before and after blindness (grade school, high school, college, vocational school, school for the blind, other)
- Previous occupations (complete list of jobs held)
- Earnings
- Hours of work
- Self-support (full, partial, etc.)
- Handicap other than blindness

In considering the individual items on the list it was recognized that it would not be satisfactory merely to suggest the subject on which information was essential. Since uniformity and comparability of data were the aim, it was essential to decide upon the nature of detail that would be desirable, and to determine in advance the

classifications under which the data would be tabulated. These standard classification schemes became part of the Committee's recommendations.

A tentative plan for a statistical card, including all required items and accompanied by an instruction sheet indicating how entries are to be made, is among the schemes which have been worked out recently. The form is to be given a trial use by one of the state organizations which has volunteered to do this before the form is recommended for general use.

Selection of a scheme of classification of data presents little difficulty in the case of many of the required items, since accepted schemes already exist. However, classification groupings were entirely lacking for certain of the items, among which are the very important items on degree of blindness and causes of blindness. For these, the Committee on Statistics of the Blind undertook to evolve suitable classifications.

The development of the classification of causes of blindness illustrates the method of procedure which the Committee has followed in its work. Briefly, the steps were these:

1. Committee members set up a tentative scheme for classifying causes, in which etiology of the eye condition was stressed, and nature and location of the eye affection subordinated.
2. This plan was submitted for criticism to a group of ophthalmologists consisting of all those associated with the National Society for the Prevention of Blindness, either as directors or advisers, and also to the ophthalmological section of the Conference on Nomenclature of Disease, which was discovered to be working on a somewhat similar plan for all diseases.
3. The scheme was presented to the British Prevention of Blindness Committee for criticism and comparison with their own plan.
4. It was tried out on a group of 1,000 cases selected at random from the files of the New York State Division for the Blind, the New York City Lighthouse for the Blind, and the Connecticut Board of Education of the Blind.
5. By incorporating the constructive suggestions which had come out of the trial use and criticisms, a revised scheme was evolved, which calls for a complete cross-classification by etiology and by nature of eye affection.
6. This classification has been formally presented to the oph-

thalmological profession here and abroad by members of our Committee, Dr. Berens and Mr. Carris.

7. The scheme was submitted to the national organizations representing workers for the blind, by Miss McKay, and approved for trial use by them.
8. Through the good offices of the superintendents of state institutions and supervisors of public school classes for the blind, contacts were made by Miss McKay with the examining ophthalmologists. During 1933-34 these physicians supplied eye examination records of 2,702 pupils for classification by the Committee on Statistics of the Blind.
9. Arrangements were made to carry on similar studies for these schools routinely, each year, and to add to the group of schools covered, so that eventually information on all children enrolled in schools for the blind will be complete and available currently.

No compilations of adult cases have been made as yet by the Committee but it is a source of great satisfaction to Committee members to learn that a few organizations, serving groups of adult blind, have undertaken to use the Committee's classifications in making their own studies. I have in mind particularly the plans for the study of pension applications by the Pennsylvania Council for the Blind and the co-operative study of case records being made in New Jersey by the Commission for the Blind and the statistical division of the State Department of Institutions and Agencies. There may be others of which the Committee members have not heard.

The cause classification is subject to some further revision with use but enough has already been done to indicate that it is sound and useful. The main groupings used in the classification will become apparent in Dr. Holloway's discussion of the statistics, compiled by the Committee, on causes of blindness among children.

While the classification of causes of blindness and its application in statistical studies have consumed a major portion of the Committee's time to date, the solution of other problems has also received attention.

Among the problems of paramount importance is that of finding a satisfactory definition of blindness. On this one point alone there has been, perhaps, more disagreement among agencies for the blind than on any other subject. The Committee was aware

that other groups had worked on this problem before it, and that its solution was complicated by the fact that many of the definitions in use had been written into state laws. Having determined that absolute agreement was practically unattainable and possibly undesirable, the Committee recommended that "the blind" be divided into several groups, graded by the amount of visual perception remaining. It was felt that, if summaries of case data were presented by these groupings, we could not only tell at a glance the groups covered by each agency but we could also make totals and comparisons which are statistically sound. The vision groupings selected were intended to indicate differences which have a real significance in determining the tasks which an individual can perform. The classification has still to be scientifically tested. The five groups as they appear on the tentative schedule are:

Group	Description of Group	Snellen Measurements—(feet)
1	Totally blind or having "light perception" only	0 up to but not including 2/200
2	Having "motion perception" and "form perception"	2/200 up to but not including 5/200
3	Having "traveling sight"	5/200 up to but not including 10/200
4	Able to read large headlines	10/200 up to but not including 20/200
5	"Borderline" cases	20/200 or more but not sufficient for use in an occupation or activity for which eyesight is essential

One advantage of this type of classification is that it can be extended to include one or more groupings covering those with seriously defective vision who are not blind, but about whom we may wish to tabulate the same type of statistical items. For example, it would be highly desirable to make a study of causes of eye difficulty in defective vision cases, using the same cause classification in order that the two groups might be compared.

Another problem on which the Committee has worked is the development of a simple form to be used by the examining ophthalmologist in reporting his medical findings and recommendations to the agency for the blind. It became evident that such a

standard form would be necessary when it was discovered, first, that many agencies were relying upon the physicians to supply whatever information as to diagnosis they wished to give, and, second, that some organizations had special report forms which did not call for the information which the Committee on Statistics of the Blind was planning to tabulate. The form is not designed to serve the purpose of the case record used by the physician in his office or clinic, but is intended to give the agency a minimum of medical information which it requires for intelligent service to the individual and for statistical purposes. The forms may be purchased from the American Foundation for the Blind or, where an organization requires still further diagnostic detail, the items of the Committee on Statistics of the Blind form can be incorporated in the more elaborate form of that agency.

One of the earliest activities undertaken by the Committee on Statistics of the Blind was concerned with the problem of determining the number of blind persons in any area. As mentioned above, it was well known that the counts of the census were incomplete. The registers of the blind kept by state commissions for the blind seemed more complete but, since they tended to include only individuals eligible for the particular services offered by the commissions, it was felt that they could not be assumed to be 100 per cent complete, unless or until they had been checked. Hence, an intensive survey seemed desirable.

In his capacity as executive of a state commission, one of our members, Mr. Ryan, volunteered to make a special census in two areas in his state, using several methods of case finding suggested by committee members. The resulting register was checked against the United States Bureau of Census' returns for the same areas, in an effort to discover the types of cases formerly missed and the most effective methods of case finding. In part of his North Carolina surveys, Mr. Hayes, of the American Foundation for the Blind, used a house-to-house-visit method suggested by the Committee on Statistics of the Blind. In the recent Brooklyn survey, which was made under the direction of the New York State Division for the Blind, somewhat different methods were employed. From the reports of these surveys, sufficient information is available to indicate that periodic case-finding surveys are

needed to keep registers up to date. This is essential if statistics are to be complete even for limited areas.

From this presentation of the major activities of the Committee on Statistics of the Blind, it is seen that the chief result of the work to date has been to produce a set of standards for the collection and classification of information concerning the blind. As will be apparent from the reports of our other speakers, a beginning has been made in the next steps, which are (1) to gather data on essential medical and social facts for statistical summary and analysis, and (2) to make such application of the data as the findings indicate.

We cannot emphasize too strongly the fact that in the future, as in the past, the success of this undertaking will depend upon the active co-operation of all workers concerned in the two allied fields of prevention of blindness and work for the blind. For, as Dr. Jackson has so aptly stated it, "Advances in knowledge and achievement are brought about by observing, correlating and using facts. We must have more accurate, explicit and reliable statistics of blindness as it now exists in our country."

There can be little doubt that if the statistical program is successfully carried out we shall have the necessary guides for bringing a new and square deal to an important group of the handicapped—those with defective vision.

CHAIRMAN HURLIN: I think you will see from Miss Kerby's paper that the Committee has been attempting to cover numerous aspects of the problem of the production of tools and the sharpening of the tools we already have for dealing with facts concerning the blind and the prevention of blindness.

The next speaker, Dr. Holloway, of the Overbrook School, is not a member of the Committee but has been very instrumental in helping the Committee on one particular phase of its work, and has made use of some of the data that have been produced by the Committee, particularly by Miss Kerby and Miss McKay, on causes of blindness. Dr. Holloway, I think, made his school records available to the Committee, his being the first school in which the new scheme for classification of the blind by the standard list of causes was tried.

The New Statistics on Causes of Blindness Among Children

Thomas B. Holloway, M.D.

It seems proper at the onset of my remarks to call attention to the fact that if we eliminate the congenital conditions, the various refractive errors, direct contamination of the ocular structures, trauma, including radiant energy, and the various types of tumors, all of the remaining diseases of the eyes are dependent upon pathologic changes affecting adjacent or distant parts or organs. It might be added also that a definite percentage of ocular tumors are metastatic. The fact that so many of the pathologic processes encountered in ophthalmology are secondary explains why it is frequently essential to refer our patients to those practicing other branches of medicine. In other words, we are not content to treat what may be but a local manifestation of a remote pathologic focus or of a systemic disease, but we attempt to eliminate the exciting cause. Could this be definitely and positively determined in each instance, the accumulated statistics available at every ophthalmic center would be invaluable in the course of a few years in pointing out the incidence of ocular affection resulting from the various local or systemic diseases. Needless to say, there are many deterring factors at the present time that prevent us from achieving the ideal objective in many instances, but much of the advancement in modern medicine has been brought about by such comprehensive and correlating studies.

The Committee on Statistics for the Blind, in its approach to a classification for the causes of blindness, has included, very properly and wisely, in this study an etiological as well as a topographical classification, hoping that the ultimate results may indicate the direction in which its efforts may be best expended to subserve the primary objective, namely, the prevention of blindness.

But the inclusion of an etiological classification serves still another purpose in that it places before the numerous non-medical workers allied with our various societies and organizations a list of possible affections that may produce serious ocular diseases, and they in turn pass on such information to the laity. In other words, it will serve as a method of education which, in my opinion, is the

most important factor of all in the matter of prevention of disease. But this education must be of the type that can be understood and it must be persistent, for there is a rapid turnover in the material presented for education. On the other hand, I believe the etiological data will be much more difficult to elicit and likewise will be less reliable than the data pertaining to the topographical classification. What is more, I believe it will be less reliable than similar data obtained at most of the ophthalmic centers where a permanent group of physicians would be acting as the correlating agents. But none of these statements should detract from the classification attempted and the splendid efforts so far exerted in its accomplishment; whatever we obtain will be better than what we have at our disposal at the present time.

Naturally, in attempting such a classification, attention would be directed first towards the schools for the blind. It must be remembered that the incidence for the various causes of blindness will be found to vary somewhat according to the locations of these schools, but I do not believe as greatly as this would pertain to the causes of blindness acquired in adult life, where, for example, trauma should show a wide variation in the industrial sections of the country as compared with the agricultural sections. Several factors pertinent to the schools will have a direct bearing on the importance and accuracy of these statistics. First, the character or amount of data on the application blanks necessarily will have a direct bearing on the etiology. At Overbrook we have made a complete revision of our application blank which will include one part pertinent to the education of the child, a second part which pertains to general medical inquiries, and a third part applicable to the eye alone. Further, it will be required that each applicant shall be examined before his admission by a physician who is an eye specialist. This may serve as an incentive to certain other schools to make similar revisions when the opportunity affords. As for our revised application blanks, the information requested or demanded will groove satisfactorily with the requirements of the Committee on Statistics of the Blind, as well as those of the administrators of the pension fund for the blind, which fund became operative in Pennsylvania during the present year. It is probable that with the revisions already made, certain letters of inquiry to

physicians or hospitals may be necessary to obtain the required data. Even then it is possible that in certain instances no reliable data will be obtained and the ultimate decision depends upon the judgment of the attending ophthalmologist. The ophthalmic background of the physician responsible for the examinations at the schools will have a bearing on the statistics under discussion. Moreover, it must be realized that in all schools for the blind there is a definite percentage of students whose intelligence quotients are below the average (at Overbrook the dull, backward and feeble-minded groups total 43.7 per cent, and 8.7 per cent of the total number in the school are probably feeble-minded). Naturally such children are difficult for subjective testing and for some types of objective tests. As a rule the external examinations can be made fairly satisfactorily, but even these examinations are impossible or quite unsatisfactory, in certain instances, for some months at a time. The only way some of these children could be examined satisfactorily would be to etherize them and that procedure we never resort to. Finally, when the interior of the eye is examined, one is attempting to look through a constantly moving pupil at a similarly moving object, for practically all of these eyes with great impairment of vision, or in eyes totally blind, have the so-called searching movements associated with nystagmus. As a consequence, it frequently requires painstaking and persistent efforts to get even a passing view of certain structures within the eye and there is no opportunity for protracted study of the details of the eye-ground, such as is the case in normal eyes.

Naturally, clinical and ophthalmological experience will determine the final classification of certain cases, especially where the etiological data may be deficient or even wanting. It must be remembered that the physician is confined to the data presented and seldom has an opportunity to interview the parents. Even in certain instances where the etiological factors are available, the clinical conditions found might make the statements as to the assigned cause seem highly improbable. Finally, in a case with an accurately assigned cause, two thoroughly competent physicians might differ as to the condition really responsible for the blindness, for it must be remembered that in many of these eyes several

serious conditions may be present, and any one of them capable of producing blindness or much impaired vision.

Before taking up the discussion of causes of blindness I want to revert to the year 1908 when I first went on duty at the Overbrook School. At that time I found a considerable number of children in the School who had, in my opinion, too much vision for a school for the blind. After consultation with Mr. Burritt, we decided that some visual dividing line was necessary for a proper working guide and we set up a standard of 6/60, or 20/200. As the opportunity presented, those children having better vision than this standard were gradually eliminated. We felt that from a psychological, educational and economic standpoint such a step was justified. As far as I know, this standard has been rather generally adopted, not because it was used by us, but probably because others interested in the same work independently arrived at the same conclusion. The first social service department in Philadelphia was organized in 1907 but, needless to say, for many years after that many of the untrained workers with various charitable organizations seemed to regard the school as a home for blind children, irrespective of any other medical condition that might be associated with the ocular affliction. I am happy to say that the adoption of a definite visual standard and the more widespread recognition of the value of the social service worker have made some of the problems of admission less troublesome.

The amazing thing to me is that the group for which it was not possible to specify the etiology constituted only 9 per cent of the total. It may be difficult to lower these figures in the near future, but doubtless much can be done towards making the etiological classification more accurate.

In considering an etiological classification it is well to remember that the chief causes producing blindness in those of school age are the congenital defects, ophthalmia neonatorum, hereditary syphilis, the exanthematous diseases, trauma (as the result of explosives or play or sport), certain intracranial affections (as meningitis, hydrocephalus and brain tumors), tuberculosis and trachoma.

In considering some of the ocular conditions encountered in schools for the blind let us first refer to the largest group, namely, the congenital and hereditary conditions; the incidence for these is

TABLE I.—CAUSES OF BLINDNESS—CLASSIFICATION BY ETIOLOGICAL CAUSE*

Cause of Blindness	Number	Per Cent	Cause of Blindness	Number	Per Cent
INFECTIOUS DISEASES.	772	28.6	TOXIC POISONING (excluding industrial).	2	.1
Diphtheria.	3	.1	Tobacco.	..	..
Gonorrhea (excluding O.N.).	6	.2	Alcohol (ethyl, grain).	..	..
Measles.	24	.9	Alcohol (methyl, wood, denatured).	1	.05
Meningitis.	55	2.0	Other toxic poisons, not specified.	1	.05
Ophthalmia neonatorum					
Gonorrheal.	82	3.0	NEOPLASMS.	58	2.2
Other types, specified.	..	..			
O. N., not specified.	208	7.7	NON-INFECTIOUS SYSTEMIC DISEASES.	33	1.2
Scarlet fever.	6	.2	Anemia and other blood diseases.	..	..
Septicemia.	16	.6	Diabetes.	..	..
Smallpox.	3	.1	Nephritis and other kidney diseases.	1	.1
Syphilis			Vascular diseases.	..	..
Prenatal.	126	4.7	Non-infectious diseases, central nervous system.	14	.5
Acquired.	..	..	Diseases of pregnancy and childbirth.	..	..
Origin not specified.	15	.6	Other systemic diseases, specified.	13	.4
Trachoma.	13	.5	Systemic diseases, not specified.	5	.2
Tuberculosis.	13	.5			
Typhoid fever.	1	.1	CONGENITAL AND HEREDITARY.	1,382	51.1
Other infections, specified.	30	1.1	Prenatal.	1,067	39.5
Infections, not specified.	171	6.3	Hereditary and familial.	315	11.6
TRAUMATIC AND CHEMICAL INJURIES.	211	7.8			
Non-industrial injuries.	..	..	ETIOLOGY NOT SPECIFIED.	244	9.0
War.	..	..	Unknown to science.	4	.1
Explosives.	..	..	Undetermined by physician.	186	6.9
Fireworks.	4	.2	Not specified.	54	2.0
Firearms.	19	.7			
Other explosives, specified.	28	1.0			
Explosives, not specified.	..	..			
Play or sport.	68	2.5			
Household activities.	4	.2			
Street and traffic accidents.	10	.3			
Injuries incidental to surgery.	1	.05			
Birth injuries.	4	.2			
Other non-industrial injuries, specified.	30	1.1			
Non-industrial injuries, not specified.	22	.8			
Industrial injuries and diseases			TOTAL—ALL CAUSES.	2,702	100.0
Trauma (including burns) specified.	1	.05			
Industrial diseases (including poison).	..	..			
Industrial injury, not specified.	..	..			
Injuries, not specified.	20	.7			

* Based on 20 schools and classes for the blind, 1933-34; compiled by Committee on Statistics of the Blind.

51.1 per cent. It must be realized that there is a decided tendency for congenital defects in the eye to be multiple. For example, a child may have a microphthalmos, but associated with it there may be a coloboma of the iris and choroid and a defect in the crystalline lens. How is this particular case to be classified topographically? Among the congenital conditions, buphthalmus, hydrophthalmos, or ox eye, as it is sometimes called, is conspicuous. Essentially it is an infantile form of glaucoma, and operative procedures, in my experience, are most unsatisfactory. Aniridia, or that condition of the eye where the iris or colored part of the eye is partially or completely absent, as far as one can see by external examination, is notoriously hereditary and may lead to secondary glaucoma. Albinism, while not infrequently seen, in my experience is not as often associated with the extreme degrees of impairment of vision or actual blindness. In my experience, also, high myopia as seen in a school for the blind is more frequently observed in association with other contributing conditions.

Unfortunately it is difficult to get accurate statistics concerning cataract. Many of these children have been operated on prior to their admission. Was the cataract one of the true congenital types or was it secondary to a keratitis or a disease of the uveal tract, that is, of the iris, ciliary body and choroid? Frequently there is no definite way of determining this. As to congenital cataract, I believe it should be generally known that in most of these cases, despite an absolutely perfect operative result, the vision still remains defective and, in a definite number of children, the best that can be obtained is not sufficient to exclude them from a school for the blind. In other words, in addition to the cataract, the eye may be amblyopic, often without demonstrable changes in the eyeground.

Rosters for schools for the blind, at least in the east, are probably not exempt from the same changes that are occurring in the rosters of our eastern colleges, as far as the increase in the number of Slavic and Italian names is concerned—that is to say, there are fewer British, French, and German names. During the past five to ten years I have been impressed with this change in our roster at Overbrook and have commented upon it on several

occasions. Needless to say, these changes would probably apply more particularly to schools in the east, or probably to the New England, Middle Atlantic and North Central States. Further, there has been a vague suggestion, from what brief contacts I have had with these children, that as a group their mentality is inferior to the other children considered as a group. In other words, I believe the intelligence quotients for these children would show a higher percentage in the groups rated below "average," that is, the backward, dull and feeble-minded, taken as a group, for my observations have been too conjectural to warrant an attempt to subdivide the below "average" into grades. I believe this question is important enough from an economic and immigration standpoint to warrant an investigation. Likewise it has seemed to me that there has been an increase in the number of our congenital and hereditary conditions, and I am including here the cases of retinal degeneration; this is but an impression, for up to the present, no statistical study has been made, but one is now in preparation.

Before leaving those ocular conditions classified topographically under "eyeball," reference might be made to the item "disorganized eyeball." Needless to say, these eyes represent the terminal stages of various destructive inflammations of the eyes, where enucleation has not been regarded as necessary or consent for operation has been refused. In the majority of cases, such an eye condition is not due to a congenital factor, but where this factor is present it is probable that buphthalmus and aniridia would be the leading contributors, in each case dependent upon the glaucomatous process.

As to "panophthalmitis and endophthalmitis," these are dependent upon infections from without, ectogenous infections, or infections from within, that is, from certain inflammatory foci elsewhere in the body, endogenous infections.

The corneal group is an interesting and important one constituting 14.4 per cent of the cases. It will be noted that no cases involving the conjunctiva have been included in the topographical classification, doubtless because the severe infections of this membrane produce blindness as the result of involvement of the cornea or the uveal tract. One of the most interesting items in this group

TABLE II.—CAUSES OF BLINDNESS—CLASSIFICATION BY TOPOGRAPHICAL CAUSE*

Cause of Blindness		Number	Per Cent	Cause of Blindness		Number	Per Cent
EYEBALL		838	31.0	CRYSTALLINE LENS		461	17.1
Hypertension (glaucoma)		4	.2	Lens opacity (cataract)		423	15.7
Refractive errors				Dislocated lens		37	1.4
Myopia		93	3.4	Other affections of lens, specified		..	..
Other refractive errors, specified		51	1.9	Affections of lens, not specified		..	..
Refractive errors, not specified		1	.1				
Motor anomalies				CHOROID AND RETINA		390	14.4
Amblyopia ex anopsia (squint)		9	.3	Choroiditis		50	1.8
Other motor anomalies, specified		..	..	Uveitis		90	3.3
Motor anomalies, not specified		..	..	Retinitis		10	.4
Developmental anomalies and degenerative changes				Disseminated chorioretinitis		138	5.1
Albinism		63	2.3	Detached retina		9	.3
Anophthalmos (excl. surgical)		9	.3	Retinal hemorrhage		1	.1
Megalophthalmos		175	6.5	Retinal degeneration		81	3.0
Microphthalmos		77	2.8	Obstruction central artery or vein		..	..
Aniridia		25	.9	Other affections choroid and retina, specified		11	.4
Disorganized eyeball		234	8.7	Affections choroid and retina, not specified		..	..
Other devel. and degen. changes, specified		73	2.7				
Devel. and degen. changes, not specified		3	.1	OPTIC NERVE		453	16.7
Panophthalmitis and endophthalmitis		21	.8	Optic atrophy		381	14.0
Other affections eyeball, specified		..	..	Optic neuritis		25	.9
Affections eyeball, not specified		..	..	Neuroretinitis		41	1.5
CONJUNCTIVA		0	0.0	Other affections optic nerve, specified		4	.2
Conjunctivitis		..	..	Affections optic nerve, not specified		2	.1
Other affections conjunctiva, specified		..	..				
Affections conjunctiva, not specified		..	..	VITREOUS HUMOR		6	.3
CORNEA		389	14.4	Intraocular hemorrhage		2	.1
Interstitial keratitis		65	2.4	Opacities		3	.1
Kerato-conjunctivitis, phlyctenular		12	.4	Other affections vitreous humor, specified		1	.1
Keratitis, not specified		14	.5				
Ulcerative keratitis		277	10.3	MISCELLANEOUS AND ILL-DEFINED		105	3.9
Other affections cornea, specified		21	.8	Amblyopia, undefined		41	1.5
Affections cornea, not specified		..	..	Other ill-defined lesions, specified		..	..
IRIS AND CILIARY BODY		60	2.2	Lesions, not specified		64	2.4
Iridocyclitis		53	1.9				
Iritis		7	.3	TOTAL—ALL CAUSES		2,702	100.0
Other affections iris and ciliary, specified		..	..				
Affections iris and ciliary, not specified		..	..				

* Based on 20 schools and classes for the blind, 1933-34; compiled by Committee on Statistics of the Blind.

is phlyctenular kerato-conjunctivitis, which has the lowest incidence. At the present time this is not represented at Overbrook, and, I may add, the severer types of this affection are seldom seen by ophthalmologists in our eye clinics. This statement contrasts with the fact that the disease was more frequently encountered thirty years ago. The improvement has doubtless resulted from the efforts of those interested in the general health and welfare of children and from school medical inspection, when those affected are seen and reported while the disease is in the early stages.

Naturally the "ulcerative keratitis and sequellae" item would be the largest, for here would be included those cases resulting from ophthalmia neonatorum, those due to the other infectious diseases, and likewise a certain number of the traumatic cases.

When we consider ophthalmia neonatorum, it should be remembered that the yearly incidence for this disease at a school for the blind is a decidedly variable one. I have seen it range from 4.8 to 32.8 per cent at Overbrook. As a result, we get a better picture of the incidence when this is determined for periods of about five years. In the twenty-six years I have been associated at Overbrook, I have seen it drop from 32.5 per cent to approximately 15 per cent. It will be recalled that the incidence for pupils entering schools for the blind throughout the United States in 1932-33 was 6.7 per cent. These figures and results are astonishing when we consider the character of the disease, and illustrate what can be done when a well-directed and executed campaign of education is backed by adequate legislation.

If such results are to remain permanent or are to be improved, this campaign must continue, and the fact that this affection is not necessarily due to a venereal disease further emphasized. It is difficult to get definite figures as to the incidence for the gonorrheal type, but I believe the 28 per cent shown in the statistics under discussion is lower than is generally believed. Further, the figures presented to the Committee for statistical purposes are far too variable to be accepted as showing a fair degree of accuracy. We do know that many pus-producing organisms are capable of producing the disease—the same organisms that produce conjunctivitis in adult life—and, in addition to this, certain of these cases, as they occur in general, are doubtless of the inclusion blennorrhoea type.

Thygeson's recent excellent work concerning this last affection should be most helpful.

When we refer to interstitial keratitis, with an incidence of 2.4 per cent, we are approaching another serious condition which, while not as frequently encountered in schools for the blind as ophthalmia neonatorum, is shrouded in even greater difficulties, since it pertains to the domestic situation. Accepting as I do that the vast majority of these cases are caused by prenatal syphilis, it must be remembered that other stigmata of this disease are frequently associated with the ocular affection. In the surviving infants and children with prenatal syphilis, Stokes concedes an incidence for interstitial keratitis of 52 per cent. Further, it must be remembered that no portion of the eye is exempt from the ravages of syphilis and that involvement of the cornea is frequently, and in the severer type usually, accompanied by other ocular manifestations. As far as the cornea is concerned I believe the statistics presented are quite accurate, but whether the incidence for syphilis, 5.3 per cent, is quite as accurate is questionable. I mention this chiefly because I am in ignorance as to whether a routine Wassermann test is made at all of the schools included in this survey. At Overbrook we began these tests in suspicious cases in 1921, but since 1924 this test has been used routinely. Needless to say, I believe it should be part of the routine at every school. But even this test is not infallible in prenatal syphilis for, in the aggregate, only about 66 per cent give a positive reaction; the test becomes less efficient as the child increases in age. The difference in the statistical figures for syphilis, 5.3 per cent, and interstitial keratitis, 2.4 per cent, is made up chiefly of those syphilitic manifestations included under the uveal tract and optic nerve.

As is well known, the National Society for the Prevention of Blindness and the American Social Hygiene Association recently initiated a campaign against prenatal syphilis, and, in doing so, I believe they directed their energies along deserving and much needed concerted efforts. When fully established, this crusade should receive the unstinted support of the medical profession, all allied organizations, and the various agencies for public education. I dare say that to most people the reference to syphilis would be

far less reprehensible than much of the text presented by some of our newspapers and magazines.

A word might be said about trachoma; in the present statistics the incidence is low, 0.5 per cent. Twenty-five to thirty years ago, approximately a million aliens were admitted to this country each year and an annual average of about one thousand cases of trachoma were detected at the port of New York. Our restricted immigration and the efficient foreign service of the U. S. Public Health Service have changed much of this, as can be appreciated by noting that for the year ending June 30, 1933, the number of aliens admitted was 23,068, while at the port of New York but thirteen cases of trachoma were certified. So this question tends to resolve itself into caring for the scattered cases and saturated areas already existing in this country. In other words, with trachoma, as with certain of our other political, social and economic ills, we have enough work to do in setting our own house in order without paying much attention to the foreign conditions.

The uveal tract, to which I have alluded above, is the vascular coat or tract of the eye, made up of the iris, ciliary body and choroid. Therefore, it would include those diseases listed under iritis and iridocyclitis (2.2 per cent), choroiditis (1.8 per cent), uveitis (3.3 per cent) and, I believe, the majority of those cases listed under disseminated chorioretinitis (5.1 per cent). If the last named affection should be included, it would give us a total of 12.4 per cent for the whole tract. This is the tract usually primarily involved as the result of remote pathological processes, in systemic affections such as syphilis and tuberculosis, and, secondarily, after severe corneal ulcerations and operative procedures. Frequently, as seen in schools for the blind, inflammations of this tract, for one cause or another, prevent any view of the posterior part of the eye or eye-ground, when using the ophthalmoscope.

I have just referred to tuberculosis and note the statistical incidence of 0.5 per cent. This seems low, even for the United States, where the incidence of this disease is generally regarded as lower than in Europe. However, it must be said that frequently exhaustive examinations are necessary in certain instances, before a diagnosis of ocular tuberculosis can be made, and further, the eyes of many of these students do not permit of a fundus examination

or may be in the stage referred to above as presenting a disorganized eyeball.

In considering the retina, we include retinitis (0.4 per cent), detachment of the retina (0.3 per cent), and the cases included under retinal degeneration, (3.0 per cent), a total of 3.7 per cent for the inner coat, or what might be called the photographic plate of the eye. A few of the cases of chorioretinitis may possibly belong in this group, but I have included them in the uveal tract group. Doubtless some of the neuroretinitis cases might properly be placed here. The retina, like the other coats of the eye, may be influenced by congenital and hereditary affections. The outstanding item in this group is retinal degeneration. The most frequent type is retinitis pigmentosa, including the less frequently observed retinitis pigmentosa sine pigmento. In addition to these, there are certain allied conditions that could be grouped here. While optic atrophy is frequently associated with retinitis pigmentosa, it is not always present at the time the case is examined.

Retinal detachment is most apt to occur in the higher myopes; trauma, trivial or severe, is usually the exciting cause. Not infrequently in the late stages of buphthalmos, detachment of the retina occurs. Even in the so-called spontaneous cases of detachment, trauma, in the most radical sense, is the initiating factor.

When we consider the optic nerve, the percentage conceded this group, 16.7 per cent, is about equal to that for the crystalline lens, 17.1 per cent. We also find that optic atrophy, with an incidence of 14 per cent, is the affection that ranks next to cataract in the order of frequency. This condition is produced by certain affections of the brain and spinal cord; some are of prenatal syphilitic origin, like juvenile tabes, in which affection the optic nerve is more frequently involved than in the adult type of locomotor ataxia. Included among these various intracranial affections are the various types of brain or intracranial tumors. I well recall the boy who was probably the first student admitted to Overbrook who recovered from a lesion of this type, for I had examined him before and after his operation. Prior to that time, the postpallitic type of atrophy due to tumor was seldom seen in the schools, for all of these children died. Today, thanks to the advances that have been made in neurosurgery, many of these lives are saved,

and if the children are seen before destructive pressure is made on the visual nerve fibres, many of them recover with an amount of vision that would exclude them from a school for the blind.

Aside from other affections that may cause optic atrophy, it is frequently the result of certain types of retinochoroidal disease, and these cases might be differently classified by ophthalmologists. Here some reference might be made to hereditary optic atrophy, sometimes designated Leber's disease. It is a definitely sex-limited disease, and is most frequently transmitted by unaffected females. I agree with Julia Bell that if much progress is to be made against this affection, the sisters of affected males must refrain from marriage.

Concerning the amount of vision found among these students, it is interesting to note that in seven schools the proportion having visual acuity better than 6/60 (20/200) varied between 15.2 and 36.6 per cent of the student body. Most of this group would profit from sight-saving class training. This comment is not made in criticism, for it is probable that many of these students come from sections of the country where such classes do not exist or where it might not be possible to organize them. Concerning the children having vision even better than the standard set for sight-saving class pupils, the obvious inference is that their acceptance as candidates for tactile education seems an injustice to them.

In conclusion, I desire to congratulate the Committee on Statistics of the Blind on the results of their earnest efforts and I sincerely hope that, in the future, better and more available data will be placed at their disposal. When a better job is done I believe this same Committee will do it.

CHAIRMAN HURLIN: I am sure the Committee is grateful to Dr. Holloway for his remarks. The next speaker is known to you all, I am sure: Mr. Irwin, executive director, American Foundation for the Blind.

How Statistics Influence Work for the Blind

Robert B. Irwin

I shall confine my few remarks today to mentioning some of the ways in which the statistics and records developed by the Committee on Statistics of the Blind have affected work for the blind. The records and statistics of the past have been so irregular in nature, that, in a good many cases, they hardly deserved recognition as material on which to build up statistical conclusions.

I am going to speak principally today upon the effect and value of the Committee's statistical work in the schools for the blind, because the schools have been the first agencies for the blind to make use of the blanks and classifications drawn up by the Committee. About half of the blind pupils now under instruction in this country are in schools which are using these blanks and statistical classifications. The rapidity with which the schools have come forward and adapted their examinations and their methods of keeping records so as to fall into a general scheme of statistics-gathering has been very gratifying.

Someone has said, I believe, that statistics are a collection of facts which tell you something you already know. That is not quite true, but there is an element of truth in it so far as a good many of us are concerned. They tell you things which you have had a notion were true, but which you have not been in a position to prove. Statistics, collected as the Committee has outlined, are already giving definite proof which confirms certain ideas that superintendents of schools for the blind have already had and have perhaps given them some additional ideas which they have not had before.

These statistics help the superintendent by giving him a picture of the situation. They help him to compare his school with other schools. They will help him to compare his school today with his school five years from now. Perhaps most valuable of all, from the standpoint of the administrator, they show him where administrative action should be taken and taken as promptly as possible.

The blanks require that an eye examination be made by an eye physician. An outsider unfamiliar with the situation of work for

the blind in this country might be a little surprised to find that schools for the blind have any pupils in them who have not been examined by an eye physician. The number of children who have not had an eye examination by an eye physician is, fortunately, becoming smaller, but a good many of our schools for the blind are receiving children, and are compelled by law to receive them, upon the recommendation of a local doctor who may or may not be an eye physician. The pupil is referred to the school by a local physician in his home town, in some outlying county, perhaps, and the school may or may not have this child examined by an eye physician. The blanks recommended by the Committee, however, require that an eye physician go over the entire student body and make a detailed report on the eye condition of each child, with prognosis and recommendations. In some cases, this has brought out some striking facts, of which the superintendents were formerly only partially aware, and which, when brought out in this way, have really made them see that they must take some action. For instance, in one school, they found forty children whose eye conditions, according to the ophthalmologist's report, could be improved by some kind of treatment. You may have a feeling that a few of the children in your school might have their eye conditions improved, and still you may not do much about it, but when someone points out to you that there are forty children whose sight can be improved, you will not delay longer in doing something about it.

In some cases, pupils with defective vision are sent to schools for the blind upon the order of a judge in some outlying county, not so much because their sight is so defective that they cannot be instructed in the public schools, but because their families have been broken up or some other tragic situation has occurred. Since the local doctor has certified that they are blind, and the social situation is complicated, the superintendent accepts the pupils without question, though he realizes that they have considerable vision. This superintendent may be succeeded by another. He finds children that have been there for a number of years who have considerable vision, but he probably does nothing very much about it because they came there before his time, and he does not want to take drastic action.

As a result of the adoption of these blanks during the past year, in one state, twenty children from the school for the blind have been sent to the public schools because they have too much vision to be properly classified as blind children even by a liberal interpretation of the term "blind."

I want to mention some other by-products of the use of the Physician's Report Form for Eye Examinations:

In one school, seventeen children whose sight was susceptible of improvement were given the necessary treatment or operation, with gratifying results.

In another school, where there had been no eye examinations at all, they have arranged to have all the children examined and hope to include in their next budget the necessary appropriation to put this service on a permanent basis.

The work of the Committee has stimulated a general interest in the collection of standard statistics and also in getting treatment for the children in our schools for the blind, and we are sure that it will eventually result in better teaching for these children because, after all, the amount of vision that a child has should be taken into account in planning his method of instruction.

The application of this system of classification of cases and arranging for eye examinations is not so easy in the case of the adult blind who are served by the state commissions for the blind. Adult clients are scattered over the state, and not only are they not always willing to have their eyes examined, but eye examinations are not easy to arrange. Several of the state departments, however, are taking an interest in the work of this committee on statistics, and some of them have already adopted the standard blanks. We feel certain that in the not distant future the preparation of quite satisfactory comparative statistics will be possible by reason of the fact that information is being gathered in the same way in several different states.

In states where there is a blind relief or blind pension which has some central supervision of its administration, it is not going to be difficult to collect the data called for on these blanks because, when people are applying for special relief that is given to blind people, they have to prove that they are blind. That involves an eye

examination and it is not hard to require that the eye examination be made by a qualified eye physician.

The American people are not statistically-minded. A few of us are interested in collecting statistics and appreciative of the results, but the average American is not much impressed by an array of statistics. However, the American people are interested in individuals, and they will seldom let individuals suffer if the matter is really brought to their attention. The collection of statistics by the use of these blanks and by the carrying out of examinations by eye specialists, we feel confident, is going to result in the restoration of vision to a great many people who are now on the list of the blind. The collection of figures showing the number of people who require eye care at public expense, and the pointing out of individuals who require eye treatment, are going to make it much easier for those in charge of our state departments for the blind to get funds to arrange for this work than it has been in the past.

CHAIRMAN HURLIN: Mr. Irwin, who has served on this Committee since it was established, has his feet on the ground; he does not want to support committees to recommend statistics unless something comes of it. It seems to me his own remarks this morning tend to show that, not only directly but indirectly, the preparation of good statistical data may help in work for the blind.

The final paper on the program is by Mr. Carris, whom you all know as managing director of the National Society for the Prevention of Blindness.

Preventing Blindness Through Statistics

Lewis H. Carris

I have been reminded several times during the past weeks when we have been preparing this program of the real reason for the existence of the National Society for the Prevention of Blindness. The aim of the National Society is to prevent blindness. Anything we can do which will save people from a world of darkness is worth doing.

You saw this morning how a committee on statistics of the

blind, such as this, has been able to point out certain activities growing out of the statistical surveys which have already resulted in reduction in the number of children suffering from blindness. This is an accomplishment which would have justified the expenditure of many times the money which has already been expended for the work of the Committee.

It also has done another thing for which Mr. Irwin and I congratulate ourselves. It has produced a definite joint project. We have always realized that while the activities of those who are working for the blind and the activities of those who are working for the prevention of blindness are largely in separate fields, yet there is a slightly overlapping fringe; and this is an example, we hope, of the ability of the two groups to co-operate where there is a common cause.

In presenting a summary of desirable developments in our prevention of blindness program which have been suggested to us by the activities of the Committee on Statistics of the Blind, I trust that I may be pardoned for repeating to some extent items covered by the previous speakers.

First, there should be adequate ophthalmological service for every institution and day school class. Many schools have had no service; in others the services are inadequate. As a prerequisite for such service, we should require that the eye physician meet the best standards of training and ability set up by his own profession, and his appointment be divorced from politics.

In some way, the American public must be educated to meet the needs of blind children, but not on a per capita basis. May I say that any scheme of fund appropriation for the support of schools for the blind which makes it possible to have more funds from the State for a larger enrollment, to some extent makes it just human nature to want a large enrollment in the school? Sometimes we have had reason to believe children are kept in the school when they could work better at home.

The school oculist should pass upon the suitability of applicants. He should, by a careful ophthalmological examination, determine the eye condition responsible for blindness. Through correspondence with physicians in attendance at the time of onset of blindness, or through field investigations by the school nurse or social worker,

he should determine the etiology of the eye condition. He should recommend treatment for improvement of vision wherever possible, carrying through for all children not provided for by private medical service. He should advise and arrange for necessary medical service to supplement eye care, where needed. Arrangements should be made for the proper examination and for the proper treatment. The eye physician connected with the school or institution should advise on the nature of eye work and environmental conditions, such as lighting, to make the best use of the remaining vision without harm to the eyes.

That is stating, rather categorically, the things which seem to me to be advisable for inclusion in the ophthalmological services to the schools themselves.

Then, the work of the physician needs to be supplemented by an adequate social work or public health nursing service attached to or available to the schools. These persons should have a general medical knowledge of high standard and a special knowledge of the eye. We wish that funds were available so that one of the graduates of our courses which are being held in Boston and in St. Louis might show what she could do in adequate social, or rather, medical-social work with a school for the blind. Such work needs to be undertaken.

What are some of these services? Contact with parents of pupils to secure their consent to corrective measures and operations is one of the first needs. Everyone recognizes that the parent in many instances needs to be shown to be convinced. We have not yet reached the advanced position which is taken in New York (and even in New York the law is not applied generally), which makes it possible to take the child from the parents' jurisdiction and to place authority for ordering an operation in the hands of the courts. We still, as a general procedure throughout the United States, must secure the consent of the parents for medical operation or treatment.

As mentioned above, one function of such a worker would be to investigate for the ophthalmologist facts concerning the cause of blindness. This worker would also arrange for examination and treatment of other members of the family, to prevent possible additional cases of blindness. How often it happens that children are admitted to the school for the blind and the fact that the under-

lying cause responsible for the blindness is a family trait is not discovered until too late, or, if it is discovered, there are no adequate services in the school for follow-up in the home. It is necessary to go back into the family and find out whether there are children who, in a few years, will also present themselves as candidates for admission to the school for the blind.

That would make the school for the blind an effective instrument in prevention of blindness, although it might lower potentially the number of children who will come to the school.

Of course, it is perfectly plain, from the figures which have been gathered by this Committee, that there is quite a number of children in schools for the blind throughout the country who should have adequate sight-saving class facilities. It would depend upon the local situation whether the sight-saving class facilities are to be placed in the school for the blind or not. Certainly, if these children, who have better than 20/70 vision, are to be kept in schools for the blind, sighted methods should be used. The National Society believes and has always advocated that those children be educated in public schools, provided that problems in transportation can be worked out, that they can get along with sighted people and that they do not have other problems which would lead them to be classified as blind children.

From some source, probably from the state, the schools should be provided with adequate funds for examination and corrective services. I don't know how it will be handled, or what the practice will be, but it seems to me that this is a specialized type of service in which there could be no objection to the use of state funds to keep people in the sighted world rather than to have them in a world of the blind. In the end, this would represent a real economy, both of money and of human resources.

There is need for further research. The first studies indicate what information is available but do not give satisfactory data on cause, and so forth. Additional information which could be secured through more complete examinations and investigations is needed. For example, let us consider ophthalmia neonatorum: how much of this is of gonorrheal origin and how much from other causes? What is the true syphilis figure? Information is now obscured by lack of diagnostic facilities. By more intensive study, also, the undetermined and indefinitely classified cases might be

cleared up. At least, we should have less and less of the "unknown" in new cases. There is also a very great need for real medical research in congenital blindness. It is not enough to say "born blind"; we must know the cause—syphilis, heredity or whatever the cause may be.

If someone would give us the funds, we should be glad to provide field workers who would work, under the general direction of the National Society for the Prevention of Blindness, to aid each state in its own set-up. I don't think that is going to be possible, but, if funds were available, that is the sort of service we should like to render. At least temporarily, I believe that there should be the greatest possible use made of volunteer services and funds and that there should be demonstration projects in selected areas to show the need and prove the worth of such services. We have already tried to find some funds for such a demonstration service but, so far, without success.

I have not dealt with statistics at all. I have tried to say what I hope, as a practical administrator, will be found of great value in our war against blindness.

Discussion

MR. CHARLES A. HAMILTON (Batavia, New York): Dr. Holloway's paper brought out very clearly that there were two classes of causes of blindness—etiological and topographical. In reporting from our school, for instance, supposing we have thirty new cases this year, which class of causes is the most valuable to be reported? Shall we say the person is blind through optic atrophy or blind because he had measles? Which class of causes do you want listed?

MISS KERBY: We are asking for both. We are asking, instead of the type of questionnaire which called for having the school make its own classification, that it send us a copy of the physician's report form for each pupil. The cases will be classified in the offices of the Committee, so that we can give cross-classifications.

MR. HAMILTON: You don't care what we report in our annual report?

MISS KERBY: We should like to have some more schools use the etiological classification. If you can give both the etiological and the topographical classifications, you will have solved the problem.

CHAIRMAN HURLIN: Isn't the real point, that the classifications which institutions and even some medical people have made in the past, have been neither one nor the other? Some causes have been etiological and some topographical, the result being there is no way in which one can evaluate the data and make comparisons with similar data of other people. Here is offered a standard plan; as Dr. Holloway suggested, it needs further attention, but at least it is a standard plan that will permit different institutions and agencies to compare results and will permit such organizations as this Committee to compile results from different sources. It is highly essential that both types of classification be made.

DR. EDWARD JACKSON (Denver): The report laid before us illustrates, perhaps more forcibly than anything else could, the extent and importance of the statistical problem. The American attitude towards statistics may perhaps be characterized by the saying, "Figures do not lie, but liars can figure." Actually, statistics, of themselves, tell neither truth nor falsehood. The vital point upon which we depend in statistics is the basis of observation upon which they are founded. We must depend less on questionnaires and more upon questioners.

When the Federal Government was preparing for the 1930 census, the Colorado Ophthalmological Society asked that all investigations of blindness be followed up by observations by some member of the Society; that eye physicians should be relied on to furnish the ultimate facts for the statistics. The supervisor of the census soon found out by correspondence with Washington that there was no authority in the laws that would enable him to do that in the State of Colorado.

Now is the time to act for the 1940 census, to require that the enumerators report those persons that they find blind, and that cases be made the subject of special investigation by eye physicians, to find out which are blind and what are the causes of blindness. Just those two things would add to the value of the census.

It is just about a year since, through the liberal policy of the Society, we have had a social worker in Colorado. It has taught every one of us who has been interested in the blind the importance of follow-up work.

CHAIRMAN HURLIN: Dr. Royer has been one of the prime movers in this Committee; he started the work on this scheme for standard classification of causes and also the work which hasn't had so much emphasis here today, of devising a scheme for classification by degree of vision which, to my mind, is one degree less important than these other two that we have been talking about.

DR. B. FRANKLIN ROYER (Philadelphia, Pa.): If the managing directors of the two organizations that have sponsored the activities of this Committee have had any doubt prior to today's session as to the wisdom of financing it and of stimulating it, I think any such doubt must have been removed when they listened to the discussion of Miss Kerby and of Dr. Holloway this morning, particularly Dr. Holloway's clear-cut discussion of the reason for setting forth the etiological factors. You must all have recognized that unless you go back to treat the etiological factors, other tragedies may ensue, and you must have recognized that if treatment is not given, such tragedies may occur while the child is before you.

I remember very distinctly, some eight years ago, a discussion before the workers who were teaching the blind, in Atlantic City. Speaking, not from the statistical angle but more or less from the etiological factors, one of the superintendents of one of the schools related his personal observations in his own institution where several children had entered who were definitely blind so far as disorganization of the eyeball was concerned. There was nothing to be done for the eyes, but they had sat idly by, attempting to educate the children when the etiological factor responsible for the blindness kept on functioning. The children lost their hearing because of this same etiological factor—syphilis. That teacher said my remarks were to him a good deal like fastening blame on him; he missed his opportunity, he failed to grasp his duty. He further said that until that time they had not obtained permission from parents to treat any part of a child's system if they suspected such a thing as syphilis. He and those responsible for the management of that institution hadn't any grasp, statistically, of what could be accomplished and what might be accomplished.

I am sure from what was said here today that in dealing with the

blind, whether you are looking to improve their social conditions or their general health and happiness, you will see many opportunities to preserve such small amount of vision as they have, and to preserve their health in general. You must get back to the basic etiologic fault and get all that modern medical science can do to right that particular fault. The farther you go, the more you must be guided by exact statistics and exact interpretation from medical science and, co-ordinating the two, do all that may be done for humanity.

MR. GEORGE F. MEYER (Minneapolis, Minn.): For a number of years I have been interested in the aims and objects of the Committee and in the development of these statistics. I have followed, with a great deal of interest, the correction of the methods used in gathering statistics which would point a way toward a more accurate statement of the causes of blindness. I am glad to see that the Committee has focused its attention not only upon the causes of blindness, but upon the causes of defective vision. I think there is a very definite distinction there. We have been thinking in the past, very largely, in terms of the causes of blindness as they have created the group of children that have been assigned to the schools for the blind.

In the discussion going on here this morning, we have been thinking largely of the group with very low vision yet, by reason of the very much larger number, and by reason of the calamity that defective vision brings upon the individual that is in some respects almost comparable in his social and economic life to some aspects of total blindness, we need to focus our attention quite as much upon the causes of defective vision in the group that is above 20/200. Perhaps then we can interest the public not only in the prevention of blindness by conserving the little vision that some of these people still have, but in preventing the causes that lead to partial vision.

